

Baker

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June 24, 1993

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Steet, (Bldg. N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Linda Berry, P.E.
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0133
RI at Site 48
Response to Comments - Operable Unit No. 3 (Site 48) RI

Dear Ms. Berry:

Attached are responses to comments submitted by the U.S. Environmental Protection Agency, Region IV. These comments concern the Draft Final Remedial Investigation (RI) report for Operable Unit No. 3 (Site 48) MCAS Mercury Dump. Attachment A includes the responses to comments concerning the baseline risk assessment section of the Draft Final RI report. These responses are included on the enclosed disc under the file name of "COM48.WP."

Baker has submitted a final version of this report on June 21, 1993, in accordance with the schedule agreed to between LANTDIV and the US EPA.

If you have any questions, please do not hesitate to contact me at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.

M. P. Bartman for
Raymond P. Wattras
Project Manager

RPW/lis
Attachments

cc: Mr. Keith Simmons (w/o attachments)
Ms. Lee Ann Rapp (w/o attachments)
Mr. Neal Paul (with attachments)



A Total Quality Corporation

Attachment A
Response to Comments Submitted by the
US Environmental Protection Agency, Region IV
on the Draft Remedial Investigation Report
for Operable Unit No. 3 (Site 48)
Marine Corps Base, Camp Lejeune, North Carolina

Response to Human Health Risk Assessment

1. A comparison to trip blanks, field blanks, equipment rinsate blanks and laboratory blanks was conducted to determine the source of the common laboratory contaminants methylene chloride, acetone and the phthalate esters. These chemicals were detected in a number of blanks associated with field sampling activities. These data are presented in Appendix L Quality Assurance/Quality Control Summary. Ten times the maximum amount of detected in any blank was applied to those chemicals considered by USEPA to be common laboratory contaminants. This discussion is presented in Section 4.0 Nature and Extent of Contamination. As a result, acetone, methylene chloride and bis(2-ethylhexyl)phthalate were not retained as Chemicals of Potential Concern (COPCs). This will be clarified in section 6.2.1 text.

2. Background data cannot be solely used in the selection of inorganic COPCs without considering the complexities of the site geology, site history and the chemistry of the inorganic in question. Nor should exposure based values such as a Drinking Water Equivalency Level (DWEL) be used instead of potentially applicable or relevant and appropriate state or federal criteria in the selection process. DWELs are not promulgated standards. The criteria presented in Table 6-1 are State and federal promulgated standards that consider human health, but also the technical achievability of remediating groundwater and are, therefore, more pertinent to the selection of COCs for the baseline risk assessment. In this case, the State of North Carolina Water Quality Standard for groundwater is more conservative than the exposure based DWEL and is more protective of human health. Comparing groundwater concentrations to promulgated enforceable federal and State of North Carolina groundwater criteria (which could be considered applicable, relevant and appropriate criteria) is more appropriate than a comparison to non-enforceable DWEL values derived by assuming some level of potential human exposure. Background data, site history, regional geology, industrial uses of manganese, regional geology, manganese chemistry and study area mineralogy were evaluated in conjunction with State of North Carolina and federal groundwater criteria (Table 6-1) before selecting chemicals as COPCs. This approach is consistent with USEPA's selection criteria presented in Section 5 of the Risk Assessment Guidance for Superfund, Human Health Evaluation Manual. Part A (RAGS, 1989).

Background data for manganese were presented in Section 4.0 of the Remedial Investigation Report. Background concentration of manganese ranging from 50 to 120 ug/L were detected in potable

supply wells located throughout Marine Corps Base Camp Lejeune. Potable wells are situated in the Castle Haynes aquifer, which underlies the surficial aquifer. These data need not be reiterated in Table 6-1. Two Site 48 wells installed in the surficial aquifer (GW-2, GW-3) contained concentrations of total and dissolved manganese which exceeded Castle Haynes background data. These exceedances were confirmed by a second round of groundwater sampling and analysis conducted in March of 1993. Manganese detected in groundwater is likely due to the regional geology and mineral composition of the study area. The potential for significant manganese containing mineral deposits does exist in the Atlantic coastal plain of the U.S..

The principal industrial use of manganese is for the production of steel and aluminum beverage cans. Minor uses of manganese include water purification (with potassium permanganate), as a soil conditioner, as battery oxide for dry cells and for coloring bricks and ceramics. These uses for manganese are not consistent with known Site 48 history. Furthermore, manganese was not detected at high concentrations in Site 48 soil or sediment samples. The presence of elevated manganese in soils or sediments would provide an indication of its historical use and/or disposal at Site 48. This was not the case, therefore, manganese was not retained as a COC for further evaluation in the baseline risk assessment.

Furthermore, comparative techniques such as the two times rule require professional judgement in their application. It is not a test for determining statistical significance. The two times rule is based on the accuracy criteria for CLP analytical methods which are, in general, plus or minus 50 percent (Federal Register Vol. 49, No.209, October 26, 1984). Although, the two times rule is a good rule of thumb for comparison to background, it cannot be used exclusively for the selection of inorganic COPCs for the aforementioned reasons.

3. The two times rule is not a test for determining significance. It is a rule of thumb approach based on the general accuracy data for CLP methods. This method cannot be used exclusively in the selection of COPCs. Furthermore, Table 6-2 does present base specific background concentrations of inorganic chemicals. Site specific background data in conjunction with literature background data, site history and regional geology were considered in the selection of COPCs. Nondetect results are presented in Appendix G Data and Frequency Summary. Inclusion of nondetect results in Table 6-1 would be cumbersome because of the number of samples involved. Nondetect results will not, therefore, be included in table 6-2.

4. In the first paragraph of Section 6 of the RI report it is stated that the ecological assessment will be conducted under separate cover. Therefore, no action will be taken on this comment.

5. Text will be corrected to indicate adolescent age is between

7-16 and not 6-15. No other action is required for this comment. Revision of these ages in the text does not impact the outcome of the risk assessment.

6. The text will be edited to "incidental" replacing "accidental". Additional action on this comment is not required. This correction does not impact the outcome of the risk assessment.

7. The text will be corrected to indicate 2,190 days for the exposure duration for a child. The exposure duration, 3,285 days, was not used in the estimation of risk. Consequently, no additional action is required.

8. Wording in the assumption will be corrected to "Contaminant concentration is surface soil", there is no additional action required for this comment.

9. The adult skin surface area 3210 cm² will be used instead of 2000 cm² for the estimation of risks from dermal contact with soil. Human health risks to adult base personnel and future adult residents have been estimated using this revised surface area.

10. The text will be revised to read that children and adults may potentially be exposed to COCs. This revision does not impact the risk assessment.

11. Acenaphthene was the only contaminant which was used to estimate the potential exposure from dermal contact with groundwater. A permeability constant value for this compound is not published in the USEPA's guidance document (Dermal Exposure Assessment: Principles and Application, January 1992). Consequently, a default permeability constant published in USEPA's Risk Assessment Guidance was used. Using the default value of 1E-3 does not change noncarcinogenic risk from naphthalene. Therefore, no action is required on this comment.

12. Based on USEPA's guidance document Dermal Exposure Assessment: Principles and Application, January 1992, an exposure frequency of 7 days/year is recommended. However, because further investigation is recommended, and the assessor should make professional judgements based on their own knowledge of site-specific conditions, it was determined that with this site being in a southern climatic region that 4 times the recommended frequency would be a conservative judgement.

13. The provisional toxicity values for trichloroethylene (TCE) have not been promulgated. These values are not listed in the latest version of The Health Effects Assessment Summary Tables (HEAST) or on the Integrated Risk Information System (IRIS). Therefore, the values presented in the comments will not be used to evaluate human health risks from TCE until they have been promulgated.

14. The text will be revised to "less than" as opposed to "greater

than". No additional action is required.

15. The Reference Dose for 4,4'-DDT used to estimate risk from soil ingestion will be corrected.

16. Significant uncertainty is associated with modification of the oral Reference Dose (RfD) or Carcinogenic Potency Factor (CPF) to determine an absorbed dose. RfDs and CPFs are usually expressed as administered dose. Use of administered dose toxicity values is appropriate when evaluating similar routes of exposure. However, when evaluating dermal exposure to a chemical, an absorbed dose is derived by the risk assessor. Technically, it is not appropriate to evaluate potential health effects associated with an absorbed dose using a toxicity value generated from an administered dose. Modifying the RfD or CPF (derived from an administered dose) by some arbitrary oral absorption factor does not produce a better or more accurate toxicity index for evaluating potential dermal exposure.

USEPA promulgated absorption values are not currently available because of the uncertainty in the available absorption data. For example, absorption value for a given chemical differ for different animal species and the media by which the chemical is administered (i.e. rat vs guinea pig vs mouse; corn oil vs food vs neat). Furthermore, available default absorption values cannot account for the variability of absorption between test animals and humans, nor can they account for absorption differences in individual diets or individuals of different ages, weights, race or socio-economic status. Until more appropriate dose-response factors are derived or promulgated absorption factors are published by USEPA, absorbed dose RfDs or CPFs cannot be derived and used in place of promulgated USEPA administered dose RfDs and CPFs. The uncertainty of using the current USEPA promulgated administered dose RfDs and CPFs will, however, be highlighted in the uncertainty section of the baseline risk assessment.

17. The handwritten example sheet for dermal contact with groundwater will be correct to show 1L/1000cm³. The spreadsheet generated for this scenario does not require correction.

18. The concentration (0.002 mg/L) of acenaphthene will be used to estimate potential risks from dermal contact with groundwater.

19. The dermal absorption values for the pesticides will be corrected to 0.05 and 0.01 for metals.